

Using a GIS to reconstruct the nineteenth century Lisbon parishes

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Introduction

The changes that took place in the internal organisation of the territory in the last two centuries make the knowledge of the national administrative division and the understanding of its evolution essential in Portuguese Contemporary History, especially for comparing historical data over time.

This perspective is still clearer regarding the history of Lisbon. The demographic evolution of the last two centuries and the resulting growth of the city were partially responsible for the profound changes in the administrative structure of the city. The most significant involved a drastic reduction of Lisbon's municipal limit in mid XIXth century and a deeper transformation in the city parishes a century later. These changes caused serious methodological problems, not only because of the unawareness of the exact number of parishes at each historical moment, but essentially because of the ignorance of its limits.

The primary goal of the work I will present was to rebuild the administrative division of Lisbon for the entire XIXth century. This task was carried out using a GIS, with its CAD tools, and combining digital sources, in vectorial format, representing current parish limits and city streets [1], with historical cartography, for 1826, 1864 and 1909, where old parishes were mapped [2]. Other historical maps, old city guides, contemporary descriptions and fiscal sources were also used.

This work is part of a larger project called SIGMA, financed by the Portuguese Science and Technology Foundation, under the scientific supervision of Luís Espinha da Silveira and was carry out in the Department of History of the Faculty of Social Sciences and Humanities, New University of Lisbon [3]. Part of the methodology and some map drawing was prepared with a precious help from Sofia Lucas Martins, for who I'd like to express my thanks.

Administrative reforms in Lisbon

In the first half of the XIXth century, Lisbon had 70 parishes in a municipality that was extended for about 532 km². In mid century, by the 11th of September of 1852 edict, the municipality was substantially changed, reducing it practically to the urban area of the city and loosing a great number of its parishes to new municipalities: Belém and Olivais. It remained with 34 parishes in a 13 km² area. This new circumscription maintain itself until 1885, time when Lisbon expanded its territory up to the actual limits of the municipality. By the edict of the 18th of July, Lisbon encircled 43 parishes and an 85 km² area approximately. In the following year, with the edict of the 22nd of July, the capital incorporated two more parishes, which made part of the municipality until 1895, when they were separated again and incorporated in the municipality of Loures by the edict of the 26th of September. With light changes, the municipality of Lisbon that we know today is the result of this last edict.

As we can see, the XIXth century was full of changes in Lisbon's administrative circumscription but, essentially, at the municipality level. Regarding the parishes, we know that their limits were stable during the century [4]. On the urban parishes specific case, they were established in 1780 by the edict of the 19th of April, consequence of the urbanistic modifications caused by the earthquake of 1755. However, in mid XXth century this stable panorama was radically modified. The edict of the 7th of February of 1959 created new parishes and changed significantly the limits of those that remained. After this reform, the parishes gained the limits we know today, leaving behind any correspondence between the old and the new circumscriptions. It's precisely this sudden change, said in the edict as 'the most deep of all that had changed the parochial physiognomy of Lisbon' [5], which does not permit

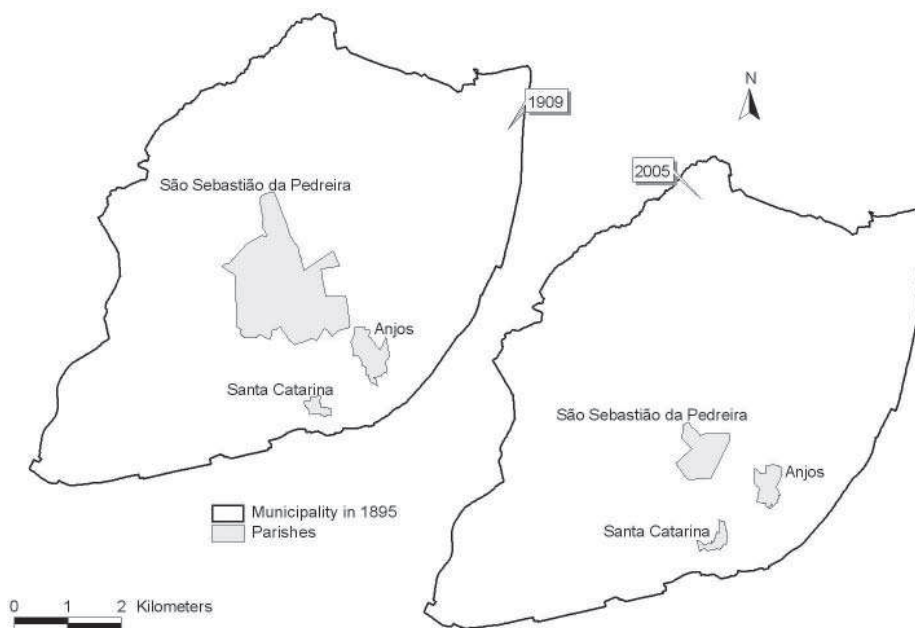


Figure 1. Parishes of Anjos, S. Catarina and S. Sebastião, in 1909 and 2005.

a retrospective reconstruction of Lisbon's parishes through the assimilation of the geographical units, methodology that was used in SIGMA for almost all the national territory [6].

Here we present only three examples of parishes changed in 1959, which illustrated very well the difficulties pointed out: the cases of S. Sebastião da Pedreira, S. Catarina and Anjos [Figure 1].

The Lisbon parishes in the XIXth century

Knowing all these changes and their consequences, becomes obvious that for the capital could not be used the same methodology because of the risk of creating a high error level. It was necessary to start from the beginning and draw the parishes based on cartographic sources of that time. In the last years these reconstruction was tried several times [7].

1. Sources and methodology

The methodology used in the SIGMA's project has some similarities with the one used by Maria Alexandre Lousada, but we worked with technologies of CAD, GIS and relational databases. Beyond that, we did not one but three maps, that represent the evolution of the parishes in Lisbon between 1780 and 1910. Another significant difference relies on the fact that

we reconstructed all the ancient parishes, urban and rural, which area was within the actual limits of the municipality.

First, it was necessary to research in different Lisbon archives looking for the required sources to do these reconstructions [8]. The objective was to find charts that had the parishes' limits represented. Of all charts found we selected five: three with the parishes' limits that we already referred [9] and other two that served as helpful material for the resolution of doubts and better identification of the city streets [10].

With the software ArcView 3.2 we used, as our work base, two digital charts, one of the roads and streets of Lisbon and another of Portugal's mainland parishes, both in vectorial format. However, they had different scales and projection systems, which compatibility was achieved by using the extensions 'Projeções de Portugal' and 'ShapeWarp', adjusting the limits between the two.

After that, all the polygons corresponding to the actual Lisbon parishes were erased, trying to obtain a work area only with the city streets, adjusted to the external limits of the municipality.

By consulting other historical charts and using old guide books [11] it was possible to identify and select, in the present road map, several of the ancient streets



Figure 2. Lisbon before the Liberalism. Municipality and parishes in 1826

that served as limit between parishes. Nevertheless, the city growth of the last two centuries, changed the physiognomy of some streets and made other disappear, creating in some cases the need for approximated drawings. In the end, we accomplished an amount of lines, selected or draw that were transformed in polygons with the 'Xtools' extension. Each polygon created represented an ancient parish, being this method adopted in all three historical charts.

However, the charts used in the first two moments, 1826 and 1864 did not represented the all municipality (which only happens in the 1909's chart); it only shows the parishes considered, at the time, as urban parishes. This fact made us face the problem of the unawareness for the 'rural' parishes' limits for the most part of the XIXth century. Nevertheless, considering the analysis of the several charts elaborated we came to the conclusion that the differences between them were minimal. This made us wandering if the same hypothesis was valid to the rest of the parishes that we already had in the 1909's drawing.

In this sense and looking forward to confirm this hypothesis, we had to try on doing a retrospective analysis of the limits in 1909. The solution was to explore fiscal sources of the city, the so called *Livros das Décimas*, which has for each parish the names of the tax-

payers, their properties and it's taxes value for the first decades of the XIXth century, organised by streets. It was possible to compare these with the ones selected for the drawing of the parishes indicated in 1909 and conclude that, in most of them, the limits in this chart were coincident with the ones referred in the *Livros das Décimas* or their variation was very small [12].

In spite of the punctual errors in the definition of the limits, we concluded that, being aware of the lacking of other cartographic sources, the most correct was to assume the 'rural' parishes of 1909 to all the XIXth century. In such case, we associated them to the 'urban' parishes, acknowledge by specific sources, for each former period.

2. Lisbon before the Liberalism

To represent Lisbon in the first half of the XIXth century [Figure 2] it was used a version of the well-known Duarte José Fava's map of 1807, produced, probably, around 1820 and stored in the Military Archive [13].

In the same archive there are at least two more copies and in all of them the parishes' limits were striped in colour in the printed part of the chart. The initial work was to confront and compare the parishes in the three charts to verify if they matched, trying to check the quality of the drawings. It was possible to see that



Figure 3. Lisbon in mid XIXth century. Municipality and parishes in 1864

the limits coincidence was almost perfect. Beyond that, the use of this chart revelled itself as the most correct choice by the quality that is unanimously recognised in the original survey [14].

With the *Carta Topográfica da Cidade de Lisboa, e Bairro de Belém...* it was possible to draw 39 parishes representing the end of the XVIIIth century and all the first half of the XIXth century, since the parochial organisation of Lisbon that took place in 1780 remained until 1852, with the exception of the Belém parish creation in 28th of December of 1833 and three annexations occurred in 1835 and 1836 [15].

3. Lisbon in mid XIXth century

The city of Lisbon in mid XIXth century [Figure 3] it's the result of the work made over the *Planta da cidade de Lisboa...*, published in 1864 by Frederico Gavazzo Perry Vidal. There are some copies of this chart in the National Library, in the City Museum and in the Lisbon Geographic Society, all of them printed and with the parishes and quarter limits in several colour pencil lines.

The use of this chart considered not only its quality but also the information given once more by Vieira da Silva about his author, a civil engineer that had 'done some field work to accomplish his goals' [16].

There were made 34 parishes' drawings that corre-

sponded to the all municipality, meanwhile reduced. The limits established for the parishes are very similar to the 1826's. Concerning the parishes that became the municipality boundary, there are obvious differences, caused by the creation of a circumvallation road, which divided some parishes intra and extra the city walls. These parishes drawing can be used between 1852 and 1885, since during these 33 years only very little changes happened caused by two parishes' annexation.

4. Lisbon in the end of the XIXth century and in the beginning of the XXth century

In 1885, Lisbon suffered a new administrative organisation, in this case, made by a new circumvallation road and the annexation of some parishes lost in mid century. The parishes' limits draw for 1885 are valid until the end of the Monarchy in 1910, except for the period between 1886 and 1895, in which the municipality still included two more parishes [Figure 4].

The draw of these parishes was based in the *Planta completa da cidade...*, published in annex of the *Anuário Comercial* in 1909 and made by Caldeira Pires. According to Vieira da Silva the 'General Caldeira Pires co-ordinated and elaborated several plans of Lisbon' [17], this one being colour printed and representing all the capital parishes limits. The chart is the National



Figure 4. Lisbon in the end of the XIXth century. Municipality and parishes in 1886

Library and it's the only example that we have knowledge of.

There were 43 parishes in 1885, 45 in 1886 and again 43 in the chart of 1909. Considering that in these years the modifications occurred at the municipality limits, with the inclusion of new parishes, and not on the parishes limits itself, we can use the same draw for the end of the XIXth and the beginning of the XXth century.

Conclusions

The methodology applied in this study could include other options, probably equally valid. One of them would be to do a digitalisation of the original historical charts and elaborate the polygons of the parishes over them. However, this would turn to be a more complex task for further compatibility between the different charts produced because they have very different scales and projections.

Nevertheless, our option, and in particular the use of the geographical information system, permitted the reconstitution of the parishes limits in Lisbon for all the XIXth century with a reduced level of error. More important, it made available a helpful tool for spatial analysis, in a vectorial format that will turn possible in the future the comparative study of multiple historic variants in the last two centuries. At the same time,

it's a significant contribute for the development of the SIGMA's project since it permits to correct the lack of the system on the cartography of the main city of the country.

References

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 9. See reference no. 2.
 10. *Planta da Cidade de Lisboa. Nova denominação dos bairros pelo Alvará de 17 de Fevereiro de 1826*, no scale, s.l., s.n., s.d., Military Archive (Engineering Corp), and Folque, Fillipe e Silva, F. M. Pereira da, *Carta Topographica da Cidade de ...*, scale – 1:5000, Lisbon, Direcção Geral dos Trabalhos Geodésicos, 1878, National Library.
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 13. See reference no.2. In association and as reading auxiliary to this chart it was used another one existent in the same archive from 1826. See reference no.10.
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